HOTWIRE® 8610 DSLAM

INSTALLATION INSTRUCTIONS

Document No. 8610-A2-GN10-10

PARADYNE™

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Product Documentation on the World Wide Web

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Complete documentation for this product is available at **www.paradyne.com**. Select *Library → Technical Manuals → Hotwire DSL and MVL Systems.*

Select one of the following documents:

> 8000-A2-GB22
> *Hotwire Management Communications Controller (MCC) Card, IP Conservative, User's Guide*
>
> 8000-A2-GB29
> *Hotwire Management Communications Controller (MCC) Card User's Guide*

Refer to the MCC User's Guide for a list of the appropriate DSL card documents.

To request a paper copy of a Paradyne document:

- Within the U.S.A., call 1-800-PARADYNE (1-800-727-2396)
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Before installing the Hotwire® 8610 DSLAM, read the *Important Safety Instructions* beginning on page 33.

About This Document

This guide is written for administrators and technicians who install devices at the central office (CO) or at a Network Service Provider (NSP) location adjacent to the CO. It should be used in conjunction with the appropriate Hotwire DSL card User's Guide or Network Configuration Guide, which describes how to plan the data networks surrounding the DSLAM and specific DSL cards.

To install the customer premises (CP) portion of the Hotwire 8610 DSLAM, refer to the appropriate Hotwire Remote Termination Unit (RTU) Customer Premises Installation Instructions and Hotwire POTS Splitter Customer Premises Installation Instructions.

What is the Hotwire 8610 DSLAM?

The Hotwire 8610 Digital Subscriber Line Access Multiplexer (DSLAM), which can be installed in the CO or at a customer location adjacent to the CO, is a low-startup-cost alternative to the Hotwire 8810 DSLAM chassis. It provides high-speed Internet or intranet access.

The following illustration shows a high-level view of an example Hotwire configuration.
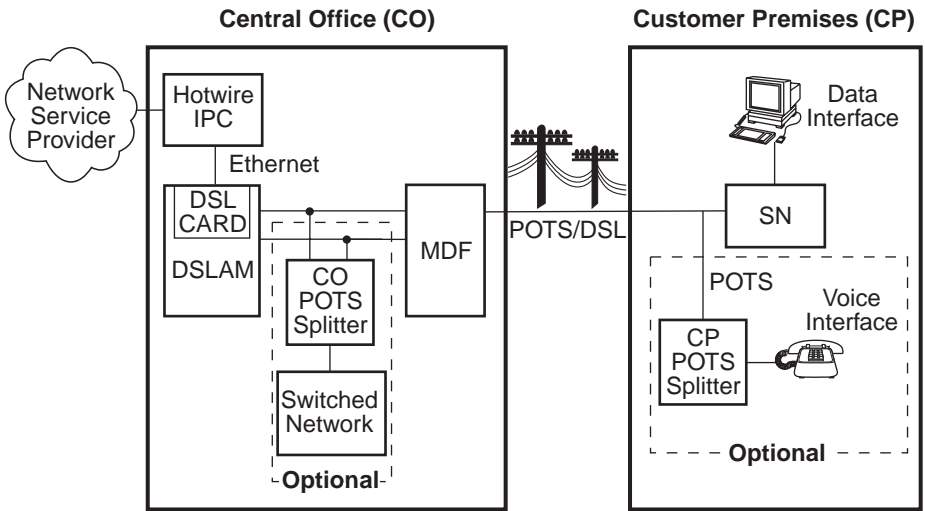
Legend: DSL – Digital Subscriber Line   IPC – Interworking Packet Concentrator
        MDF – Main Distribution Frame   POTS – Plain Old Telephone Service
        SN – Service Node

99-15674-03

The 8610 DSLAM accepts the following types of cards:

■ Management Control Processor (MCP). This is a processor card that administers and provides diagnostic connectivity to the DSL cards. It acts as a mid-level manager and works in conjunction with an SNMP network management system, such as HP OpenView, via its LAN port. It gathers operational status for each of the DSL cards and responds to the SNMP requests. It also has a serial port for local terminal access.

■ MVL, RADSL and DSL cards. These cards provide a processor and an Ethernet interface to the NSP. The processor controls the modems and forwards the packet traffic to and from the Ethernet and DSL interfaces. Models include:

— 8310 4-port and 8312 12-port Multiple Virtual Lines (MVL) cards that interoperate with the Hotwire 6310 modem.

— 8510 Rate Adaptive Digital Subscriber Line (RADSL) card that interoperates with the 5620 Remote Termination Unit (RTU).

— 8540 Digital Subscriber Line (DSL) card that interoperates with either the 5216 or 5246 Remote Termination Unit (RTU).

— 8546 DSL card that interoperates with the 5446 RTU.

■ Multirate High-bit-rate Digital Subscriber Line (M/HDSL) card.

■ Multirate Symmetric Digital Subscriber Line (M/SDSL) card.

NOTE:
RADSL, MVL, M/HDSL and M/SDSL cards are generically referred to as DSL cards in this document.

Hotwire 8610 DSLAM Features

The Hotwire 8610 DSLAM chassis has the following features:

■ **Power Redundancy**

Two versions of the Hotwire 8610 DSLAM chassis are available:

— ac power

— dc power

The ac version can also be connected to a dc source to provide power redundancy. When using the dc version, two separate dc sources may be employed to provide power redundancy. If one power source fails, the other source provides all of the power needed by the system. This is done automatically without system disruption.

The dc version requires a source of –48 Vdc, while the ac version will operate from 100 to 250 volts ac, 50 to 60 Hz.

- **Stackable Chassis for DSL Access Growth**

  Each chassis is an independent, standalone system. The 8610 and 8600 chassis are interoperable in a stack. The stackable design provides for six systems to share management access through a single MCP card (for 8610) or MCC card (for 8600) which, in turn, allows an additional slot for a DSL card in each of up to five additional systems. In a stacked configuration, the first or base chassis is equipped with an MCP/MCC card in Slot 1 leaving Slots 2 and 3 available for up to two DSL cards.

  Each additional system will accept up to three DSL cards.

  A Hotwire 8610 or 8600 DSLAM chassis can be added or removed from the stack without disrupting data service to the other items in the stack. However, management service will be disrupted.

  The base system is connected to additional systems by connecting the 8-pin modular expansion cable provided from the OUT port of the base chassis to the IN port of the next chassis in the stack.

- **Hot Swappable Cards**

  The MCP and DSL cards can be installed and removed from the Hotwire 8610 DSLAM chassis without service disruption. You can replace a card without powering down the chassis and disrupting service to the other cards.

- **Primary Network Management Support via SNMP**

  SNMP management of the DSL cards is accomplished over a single Ethernet connection to the MCP card from a Network Management System (NMS) (such as Paradyne's DCE Manager for HP OpenView). The MCP card gathers all management information for each of the DSL cards and responds to the SNMP requests on behalf of the cards.

  For a list of specific management information bases (MIBs) supported, see the appropriate Hotwire DSLAM Network Configuration Guide.

Hotwire 8610 DSLAM Components

99-16311
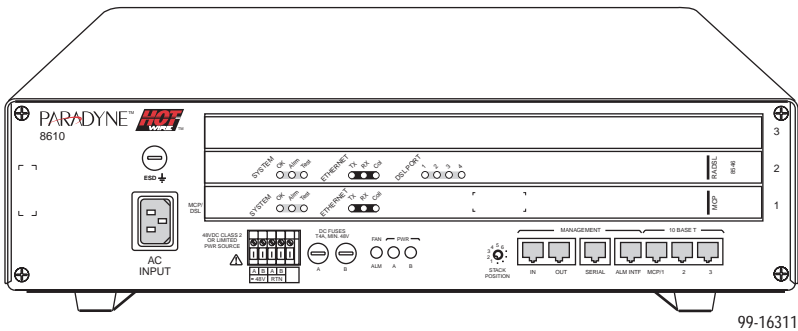
The Hotwire 8610 DSLAM consists of the following components:

- **Hotwire 8610 DSLAM base chassis**

  Hotwire 8610 DSLAM is a 3-slot chassis designed to house one MCP card in the first slot and up to two DSL cards in the remaining slots. Since the MCP card in the 8610 system can provide management connectivity for up to five other 8610 DSLAMs, these other systems can use the first slot for a DSL card, thus housing up to three DSL cards.

- **One Management Control Processor (MCP) card**

  The Hotwire 8610 DSLAM requires one MCP card mounted in Slot 1 of the base, or first, chassis in a stack. The MCP card is a processor card that administers and provides diagnostic connectivity to DSL cards in from one to six 8610 DSLAMs. It acts as a mid-level manager and works in conjunction with an SNMP network management system, such as HP OpenView, via its LAN port. It gathers operational status for each of the DSL cards and responds to the SNMP requests. It also supports a serial port for local terminal access.

- **At least one Digital Subscriber Line (DSL) card**

  The 8610 DSLAM requires at least one DSL card. Each DSL card contains a number of DSL ports (depending on model), Ethernet interface circuitry, and a processor. The processor controls the modems and forwards the packet traffic to and from the Ethernet and DSL interfaces.

  NOTE:

  You must order the MCP and DSL cards separately. They are not provided with the chassis.

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Preinstallation Considerations

Consider the following before performing installation of the 8610 chassis:

- **Installation Site**

  Your installation site should be well ventilated, clean, and free of environmental extremes. If you are installing the Hotwire 8610 DSLAM chassis in a central office rack, make sure there is 2 to 3 feet of clearance at the front of the rack in which the 8610 chassis is to be installed to allow access for the installation of the chassis, circuit cards, and cables. Also allow for proper clearance at the rear of the chassis for cabling, if using the rear cable connectors.

- **Power**

  The ac power version requires a power source of 100–250 Vac @ 50–60 Hz; maximum current draw is 3 amps @ 110 Vac.

  The dc power version requires a –48 Vdc power source (–40.0 to –60.0 Vdc; maximum current draw is 2 amps). The size of power source wires must be between 14 AWG and 18 AWG, and can be either solid or stranded. However, 16 AWG stranded wire is recommended.

- **Grounding**

  A ground lug is located at the lower right of the cover at the rear. It accepts 14 AWG wire.

  A noninsulated banana jack is located at the left front side of the unit to provide a ground for the ESD wrist strap plug.

- **Stacking**

  Up to three 8610 chassis may be physically stacked safely on top of each other. However, for stacks of more than three, start a second stack or mount in a 19- or 23-inch rack. Contact your sales representative for ordering information.

- **Cabling**

  Use only CAT3 or better twisted-pair network connection cables for DSL Termination Unit connections and interface patch cabling. Untwisted analog cables of any length anywhere in the loop substantially contribute to crosstalk and reduced loop reach.

  The following customer-provided cables and cable adapters are required with this product:

  — Plug-ended Telco 50-pin cable for connection from the Hotwire 8610 DSLAM Line ports to the CO POTS splitter shelf or MDF, one cable per DSL card.

  — 8-pin UTP (Unshielded Twisted Pair) CAT5 modular cable for connection to the DSL 10BaseT Ethernet ports. You will need this cable for accessing the LAN/WAN circuits of each DSL card.

  — 8-pin UTP CAT5 modular cable for connection from the Hotwire 8610 DSLAM MANAGEMENT MCP port to a 10BaseT hub connector (connected to an SNMP management system network) for Slot 1 in the base chassis. For other chassis in a stack, use this cable for daisy chaining the chassis together. For M/HDSL and M/SDSL cards, refer to the appropriate card Installation Instructions for the correct cable needed.

— 14-foot serial cable and DB25 and DB9 adapters are shipped with the MCP card. For connection to a modem, you will need a NULL modem adapter.

If there is adequate maintenance space at the rear of the rack, mount the chassis on the rack before installing cables. If there is inadequate space to do this, install the rear-mounted network connectors on the chassis before mounting the chassis on the rack.

CAUTION:

Use of any nontwisted pair wiring arrangements, such as jumpers, can cause reduction in overall DSL reach performance, even over short distances.

NOTE:

Each Hotwire 8610 DSLAM chassis weighs approximately nine pounds (with circuit cards) and can be easily installed by one installer.

Unpacking the Hardware

When shipped, the Hotwire 8610 DSLAM chassis is packed in a cardboard shipping container. Carefully remove the 8610 chassis from its shipping container and check for physical damage. If the 8610 chassis shows signs of shipping damage, report this immediately to your shipping and sales representatives.

Package Contents

The Hotwire 8610 DSLAM chassis, as shipped, consists of the following:

- Three filler plates installed in Slots 1, 2, and 3.

- ac power cord (if your chassis has the ac power option)

- Two reversible mounting brackets (for 19- and 23-inch rack mounting)

- Associated hardware bundled in a plastic bag:

  — Four #10-32 mounting screws

  — Four #12-24 mounting screws and four #12-24 Speed Nuts (for use with racks without threaded mounting holes)

  — Four #8-32 Phillips pan-head screws for center mounting

  — Three #4-40 Phillips pan-head screws (to replace longer Telco captive screws when using the rear-mounted connectors)

NOTE:

The Hotwire 8610 DSLAM chassis requires an MCP card and at least one DSL card for proper functionality. These cards are not provided as part of the 8610 chassis and must be ordered separately.

Be sure to register your warranty at **www.paradyne.com**. Select *Service & Support* → *Warranty Registration*.

Mounting Configurations

The Hotwire 8610 DSLAM chassis can be mounted in any commercial Electronic Industries Association (EIA) standard 19- or 23-inch rack. Both 19- and 23-inch rack-mounting hardware is provided with the unit. In a typical mounting configuration, up to 14 Hotwire 8610 DSLAM chassis can be mounted in a 7-foot rack. This illustration shows the Hotwire 8610 DSLAM chassis installed in a rack.
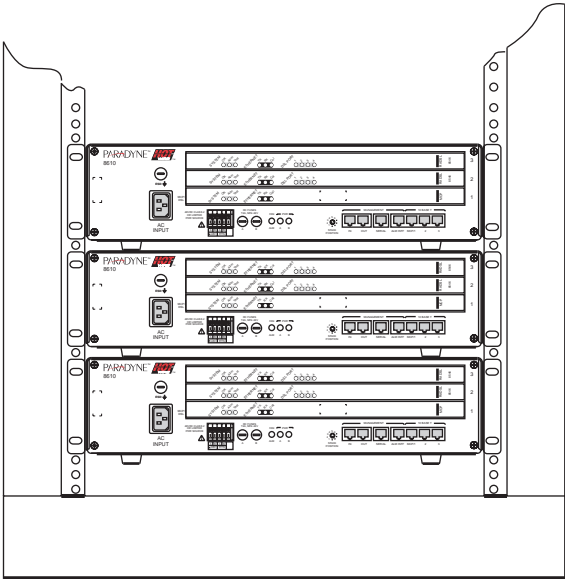
99-16309

In addition, the Hotwire 8610 DSLAM chassis can be placed on a desk or table, and stacked on top of each other. For stability, do not set more than three Hotwire 8610 chassis on top of each other in a single stack on a desk or tabletop. Two physical stacks of three chassis can be interconnected to provide shared management access for six Hotwire 8610 chassis.
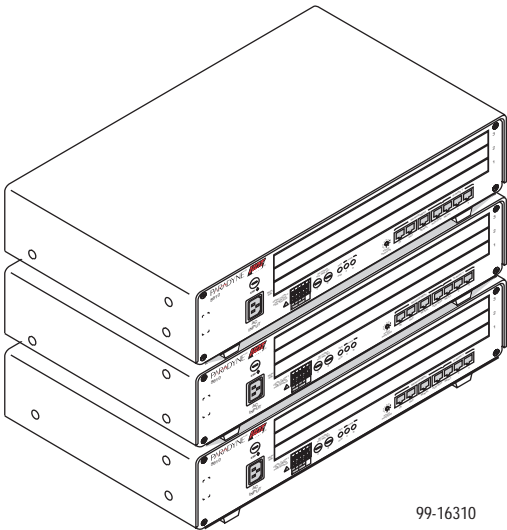
99-16310

NOTE:

In this guide, the term *rack* refers to a CO rack, cabinet, frame, or bay.

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Hotwire 8610 DSLAM Chassis Installation

The Hotwire 8610 DSLAM chassis is designed to be stacked one on top of the other on a desktop or table, or mounted in a 19-or 23-inch rack (front or center mount). Up to three 8610 chassis can be stacked on a table or desktop. Mounting brackets are provided for mounting in 19- or 23-inch racks.

You will need a large, flat-blade screwdriver and a Phillips screwdriver to install the 8610 chassis in a commercial EIA-standard 19- or 23-inch rack. You will need a small phillips screwdriver to change the STACK POSITION switch.

Stacking the 8610 Chassis

▶ Procedure

To stack the 8610 chassis on a desktop or table, select the stack position, and interconnect the stack:

1. Place the first Hotwire 8610 DSLAM chassis on a desktop or table.

2. Place the second Hotwire 8610 DSLAM chassis directly on top of the first chassis.

3. Place the third Hotwire 8610 DSLAM chassis directly on top of the second chassis.

4. Change the setting of the rotary STACK POSITION switch to the appropriate position of the chassis using a small Phillips screwdriver. Examine the switch closely to be sure the switch is set so that the notch points to the position number.

   — The base chassis containing the MCP card must be set to Stack Position 1.

   — The chassis directly on top of the base chassis must be set to Stack Position 2.

   — The chassis directly on top of the second chassis must be set to Stack Position 3.

   — Start a second stack for chassis four through six with the Stack Position switch set appropriately.
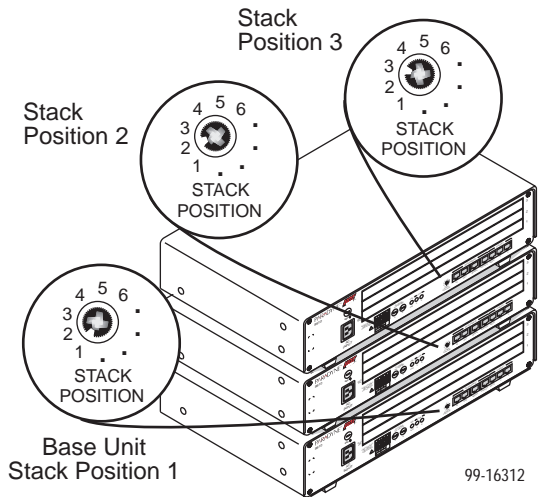
99-16312

Interconnecting 8610 Systems

▶ Procedure

To interconnect multiple 8610 systems:

1. Connect the end of an 8-pin modular cable into the Management OUT port of the base chassis.

2. Dress the 8-pin modular cable to the left and under the chassis, behind the foot, and up the side of the unit.

3. Plug the other end of the 8-pin modular cable into the Management IN port of the 8610 chassis above, dressing the cable as in the previous step.

4. Repeat for the next 8610 chassis, connecting the Management OUT port of Chassis 2 to the Management IN port of Chassis 3.
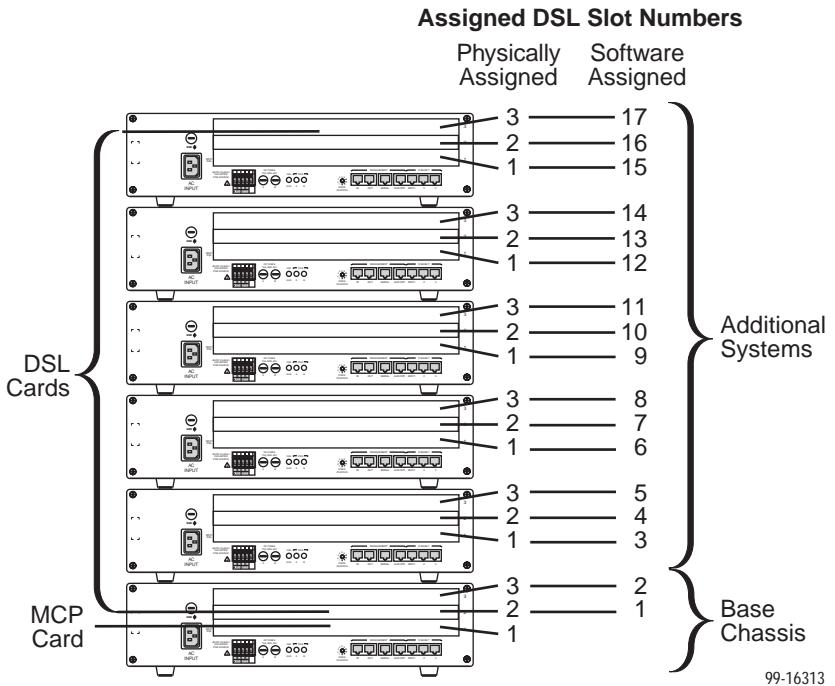
NOTE:

Bus cables must use Unshielded Twisted Pair (UTP) CAT5 cable. The total bus cabling should not exceed 25 feet.

The following illustration shows the designated number for each DSL card slot in a stack.

NOTE:

This illustration shows a stack of six Hotwire 8610 systems, which is valid for rack mounting. However, the same relationship of software-assigned slot numbers applies to two stacks of three each, mounted on a desk or tabletop and connected by a bus cable. The base chassis must still have the MCP card in physical Slot 1 with the base chassis Stack Position switch set to 1. The software does not assign a slot number to the MCP card.

Assigned DSL Slot Numbers

99-16313

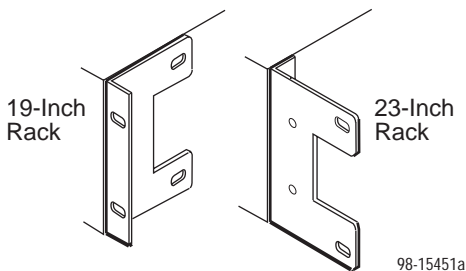### Installing the 8610 Chassis in a Rack with Threaded Screw Holes

NOTE:

You may want to install the three supplied #4-40 Phillips pan-head screws for the rear Telco connectors on the rear connectors before rack mounting the DSLAM. This will make them readily available when needed. See *Installing Network Tip and Ring Connections* on page 21 for more information.
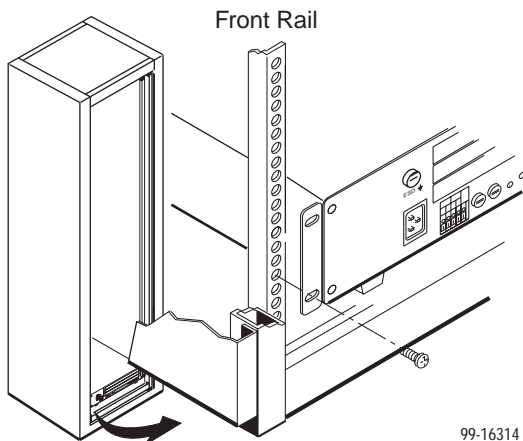
▶ Procedure

To install the 8610 chassis in a rack that has threaded screw holes:

1. Install the mounting brackets on the 8610 chassis by removing the two front screws on each side of the unit. You will reuse these screws to secure the mounting brackets to the 8610 chassis.

   — For a 19-inch rack installation, the notched flange of the mounting bracket is placed against the side of the 8610 chassis.

   — For a 23-inch rack installation, the smaller flange of the mounting bracket is placed against the side of the 8610 chassis.

19-Inch Rack

23-Inch Rack

98-15451a

2. Secure the mounting brackets to the 8610 chassis by using the screws removed from the sides of the unit.

3. Determine the preferred placement of the 8610 chassis in the rack. Then, mark the appropriate locations for the mounting screws on the rack.

4. Place the 8610 chassis against the front rails of the rack and secure with the appropriate mounting screws.

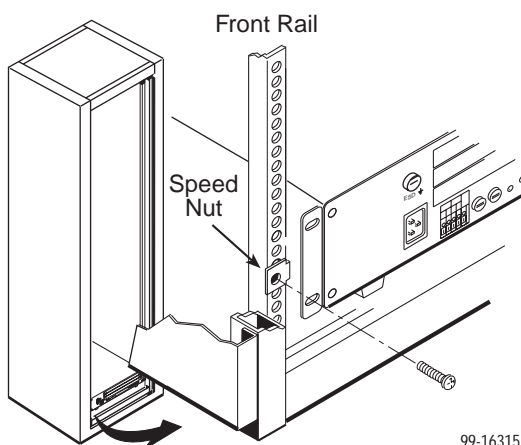Repeat these steps for each succeeding 8610 chassis.

Front Rail

99-16314

Installing the 8610 Chassis in a Rack without Threaded Screw Holes

▶ **Procedure**

To install the 8610 chassis in a rack that does *not* have threaded screw holes:

1. Install the mounting brackets on the 8610 chassis.

   — For a 19-inch rack installation, the notched flange of the mounting bracket is placed against the side of the 8610 chassis.

   — For a 23-inch rack installation, the smaller flange of the mounting bracket is placed against the side of the 8610 chassis.

2. Determine the preferred placement of the 8610 chassis in the rack.

3. Slip a Speed Nut onto each rail hole selected and align the hole of the Speed Nut with the hole in the rail.

4. Line up the chassis mounting bracket with the Speed Nut and start to rotate the screw into the chassis mounting bracket and the speed nut. Start all four screws, then tighten all four until each screw head is flush with the chassis and is securely mounted in the rack.

Front Rail

Speed Nut

99-16315

Repeat these steps for each succeeding 8610 chassis.

Center-Mounting the 8610 Chassis in a Rack

▶ **Procedure**

To center-mount the 8610 chassis in a rack:

1. Determine the preferred placement of the 8610 chassis in the rack. Then, mark the appropriate locations for the mounting screws on the rack.

2. Reposition the mounting brackets to the center-mount position using the four #8-32 screws supplied with the chassis.

3. Fasten the chassis to the rack. Insert the screws through the rack and into the two screw holes located in the center of each side of the chassis.

Repeat these steps for each succeeding 8610 chassis.

Complying with NEBS

The following must be taken into consideration for compliance with Network Equipment-Building System (NEBS) requirements.

Connection to the CO Ground Lug

▶ **Procedure**

1. Strip back the insulation approximately 1/4- to 3/8-inch on 14 AWG copper wire.

2. Loosen the screw on the GND lug located on the rear surface at the center of the Hotwire 8610 DSLAM cover.

3. Insert the stripped end of the wire into the open end of the GND lug and tighten the lug's screw. Make sure it is making contact with the stripped portion of the wire.

ESD Wrist Strap Jack

A noninsulated banana jack is located at the left front side of the Hotwire 8610 DSLAM to provide a ground for the ESD wrist strap's plug.

⚠ **HANDLING PRECAUTIONS FOR STATIC-SENSITIVE DEVICES**

This product is designed to protect sensitive components from damage due to electrostatic discharge (ESD) during normal operation. When performing installation procedures, however, take proper static control precautions to prevent damage to equipment. If you are not sure of the proper static control precautions, contact your nearest sales or service representative.

496-15149

Supplying Power

The Hotwire 8610 DSLAM chassis is available in two versions:

- dc power (−40.0 to −60.0 Vdc; maximum current draw is 2 amps)

  — The dc version has two separate dc inputs, A and B, to provide power redundancy.

- ac power (100–250V; 50–60 Hz; maximum current draw is 3 amps @ 110 Vac)

  — The ac version can provide power redundancy if a separate −48 Vdc source is connected to the B input terminal.

CAUTION:

It is recommended that the following procedures be performed by a qualified electrician.

Using a Single DC Power Source

▶ **Procedure**

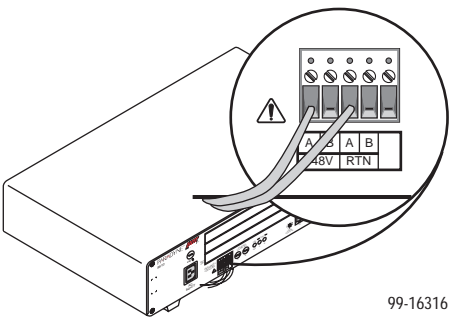To supply −48 Vdc power to the 8610 chassis from a single −48 Vdc power source:

✓ Make sure that the dc power source wires are not powered (i.e., the circuit breakers are open).

✓ The ends of the power source wires (14–18 AWG solid or stranded wire) must be stripped of insulation. If the wires are not stripped, strip the tip of each wire (about 1/2-inch in length) before inserting the wire into the appropriate terminal on the −48V input terminal block. Ensure that each wire is fully inserted into the terminal (until it can go no further).

1. Insert the following wires into Terminal A and securely fasten each wire by tightening the screw above it. The insulation should be fully within the terminal block and no bare wire should be exposed outside of the block.

   NOTE:

   You should clearly label these power source wires as −48V and RTN respectively.

Insert Power Source A's . . .	Into the . . .
Negative side of the power source	**−48V A** input terminal.
Positive side of the power source	**RTN A** (return) terminal.

2. Dress the wires under the 8610 chassis to the left behind the support foot.

3. Power the Hotwire 8610 DSLAM chassis.

4. Make sure the PWR A LED on the front panel is ON (green).

99-16316

Using Two DC Power Sources for Power Redundancy

▶ **Procedure**

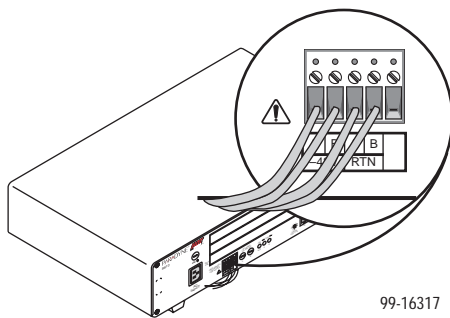To supply two dc power sources to the 8610 chassis for power redundancy:

✓ Make sure that the dc power source wires are not powered (i.e., the circuit breakers are open).

✓ The ends of the power source wires (14–18 AWG solid or stranded wire) must be stripped of insulation to about 1/2-inch in length before plugging the wires into the appropriate terminal on the −48V input terminal block. Ensure that each wire is fully inserted into the terminal (until it can go no further).

1. Insert the following wires in the appropriate terminal and securely fasten each wire by tightening the screw directly above it. The insulation should be fully within the terminal block and no bare wire should be exposed outside of the block.

   NOTE:
   You should clearly label these power source wires as −48V and RTN respectively.

Insert Power Source . . .	Into the . . .
Negative side of the first power source (Power Source A)	**−48V A** input terminal.
(Optional) Negative side of the second power source (Power Source B)	**−48V B** input terminal.
Positive side of the first power source (Power Source A)	**RTN A** (return) terminal.
(Optional) Positive side of the second power source (Power Source B)	**RTN B** (return) terminal.

2. Dress the wires under the 8610
   chassis to the left behind the support
   foot.

3. Power the Hotwire 8610 DSLAM
   chassis.

4. Make sure the PWR A and PWR B
   LEDs on the front panel are both ON
   (green).

99-16317

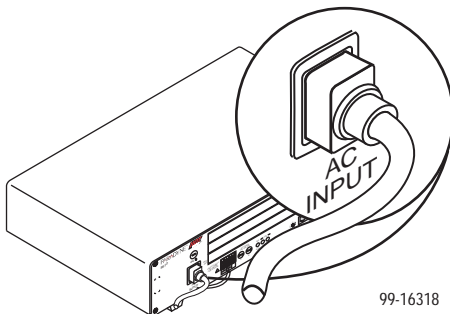## Using Only AC Power Source

▶ Procedure

To supply power to the 8610 chassis using a single ac power source:

1. Plug the ac power cord into the IEC 320
   receptacle labeled AC INPUT.

2. Plug the other end of the ac power
   cord into your ac power outlet.

   NOTE:

   The ac power source should be
   a nonswitched outlet to prevent
   accidentally turning off power.

3. Make sure the PWR A LED on the
   front panel is ON (green).

99-16318

Using AC Power with DC Power Backup

▶ Procedure

To supply both ac and dc power to the 8610 chassis for power redundancy:

✔ Make sure that the dc power source wires are not powered (i.e., the circuit
breakers are open).

✔ The ends of the dc power source wires (14–18 AWG solid or stranded wire)
must be stripped of insulation. If they are not stripped of insulation, strip the tip
of each wire (about 1/2-inch in length) before plugging the wire into the
appropriate connector on the −48V input terminal block. Ensure that each wire
is fully inserted into the terminal (until it can go no further).

1. Plug the ac power cord into the IEC 320 receptacle labeled AC INPUT.

2. Insert the wires for the dc power source into the appropriate terminal and securely fasten each wire by tightening the screw above it. The insulation should be fully within the terminal block and no bare wire should be exposed outside of the block.

> **NOTE:**
> You should clearly label these power source wires as −48V and RTN respectively.

Insert Power Source B's . . .	Into the . . .
Negative side	**−48V B** input terminal.
Positive side	**RTN B** (return) terminal.

3. Dress the wires under the 8610 chassis to the left and behind the front left support foot.

4. Plug the other end of the ac power cord into the ac outlet.

5. Power the Hotwire 8610 DSLAM chassis.

6. Make sure the PWR A and PWR B LEDs on the front panel are both ON (green).

48VDC CLASS 2 OR LIMITED PWR SOURCE

AC INPUT

B B
−48V RTN
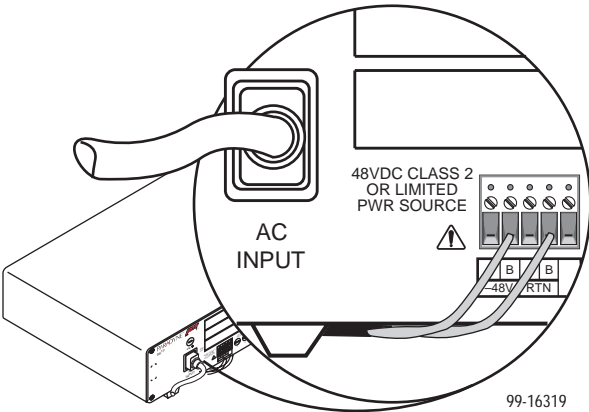
99-16319

Installing the Cards

Use a small- to medium-size flat-blade screwdriver to install the MCP and DSL cards. The MCP card *must* be installed in Slot 1 of the base chassis.

> **CAUTION:**
> **Do not insert the MCP card into Slots 2 or 3 as this will damage the DSLAM chassis. The MCP card must be used in Slot 1 of the base 8610 chassis for proper functionality. Only use the MCP card in an 8610 chassis. Do *not* try to use an MCC or MCC Plus card.**

A circuit card may be replaced without disruption to user data (i.e., you can remove and reinstall a card without powering down the 8610 chassis and disrupting user data on the other cards). To remove the card from the chassis, unfasten the screws on both ends of the faceplate. Then, simply push the ejector handles outward and slide the card out.

When swapping a new card for an old card, it is important to note that the 8610 DSLAM retains the Media Access Control (MAC) address, also referred to as the physical address. This means that the new card will have the same MAC address as the old one.

NOTES:
— All standalone 8610 chassis (i.e., chassis that are not daisy-chained to other Hotwire 8610 DSLAM chassis) require an MCP card in Slot 1, but only the base chassis of a multisystem stack requires an MCP card.

— Do not discard filler plates. Each slot in the chassis must contain a circuit card or a filler plate to maintain the required EMI shielding and to prevent air leakage from the forced air cooling. Air leakage could result in overheating which may cause the power to the circuit cards to be shut off. Store all unused filler plates in a safe place. You may need to use the filler plates to cover open slots in the chassis at a later time.

▶ **Procedure**

To install a circuit card in the Hotwire 8610 DSLAM chassis:

1. Remove the filler plate from the slot by unscrewing the mounting screws at each end.

2. Hold the card horizontally with the components on top, and insert it into the left and right card guides of the slot of the base chassis.

99-16321
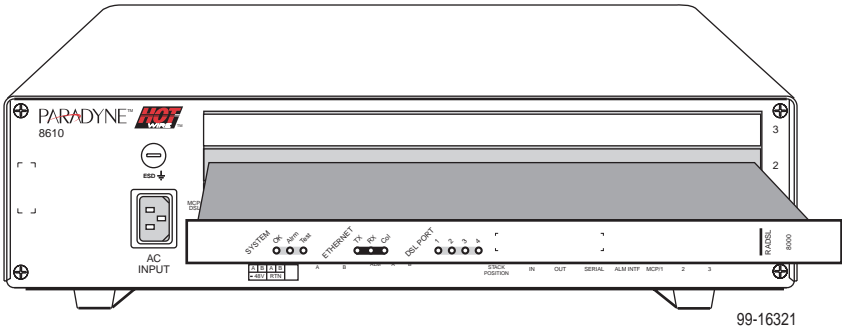
3. Carefully slide the card into the slot. Gently, but firmly, push the card until it engages its mating connectors on the backplane.

4. Press on the card's front panel with one hand and on the back of the 8610 chassis with the other until the card's connector seats in its mating connector.

5. Make sure the OK SYSTEM indicator on the card's faceplate is ON (green). If not, refer to *Troubleshooting* on page 25.

6. Secure the card by fastening the screws on each end of the faceplate. This is required to maintain proper gasket pressure on the faceplate as well as proper air flow.

NOTE:

For detailed information about the configuration and operation of the circuit card, see the appropriate card User's Guide.

Verifying the Installation

To verify the hardware installation, observe the following indicators:

■ The PWR A and/or PWR B LEDs on the front panel must be in the ON state (green):

— If you are using a single −48 Vdc power source, then only the green PWR A LED will be ON.

— If you are using dual Vdc power sources, then both the green PWR A and PWR B LEDs will be ON.

— If you are using a single ac power source, then the green PWR A LED must be ON.

— If you are using both an ac power source and a −48 Vdc power source, then both the PWR A and PWR B LEDs must be ON.

■ The yellow FAN ALM LED on the front panel must be OFF.

■ Also check the SYSTEM LEDs on the MCP and DSL cards if you have not done so already. The OK SYSTEM indicators on the cards must be in the ON state (winking green).

If these status indicators fail to appear as described, see *Troubleshooting* on page 25 and *LEDs* on page 27 for more information.

Making Cable Connections

This section provides the instructions you need to make the necessary cable connections to:

■ POTS splitter shelf or MDF

■ Ethernet hubs or switches for MVL and RADSL cards

■ SNMP management system

■ Terminal, laptop computer, or modem

■ Alarm Relay Interface

For any other type of connection, refer to the appropriate DSL card Installation Instructions.
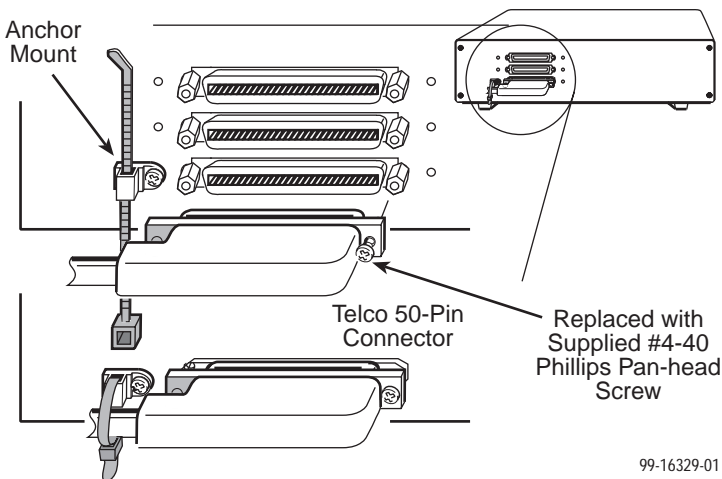
NOTE:

If you are connecting the Hotwire 8610 DSLAM to a CO POTS splitter, this procedure assumes that the CO POTS splitter shelf is already installed. For information on how to install the CO POTS splitter, refer to the *Hotwire POTS Splitter Central Office Installation Instructions*, Document No. 5020-A2-GN10.

Installing Network Tip and Ring Connections

▶ Procedure

To connect a port card in the 8610 chassis to a POTS splitter shelf or MDF:

1. Make sure that the anchor mount is installed on the side of the connector where the cable will lie.

2. Replace the longer #4-40 screw on the cable connector with the #4-40 Phillips pan-head screw shipped in a plastic bag with the unit. Do not insert the screw past the connector body until Step 5.

3. Plug the Telco 50-pin cable into the appropriate connector for the slot containing the card (labeled 1, 2, or 3) on the rear of the 8610 chassis.

4. Thread the cable tie through the anchor mount provided. Tighten the cable tie around the connector and cut off any excess.

5. Secure the Telco 50-pin cable by tightening the Phillips pan-head screw (that you replaced in Step 2) on either the left or right side of the connector, depending on the cable location.

6. Make sure the other end of the cable is connected to the appropriate POTS splitter shelf, MDF, or demarcation point.

Anchor Mount

Telco 50-Pin Connector

Replaced with Supplied #4-40 Phillips Pan-head Screw

99-16329-01

NOTE:

For detailed information, refer to the *Hotwire POTS Splitter Central Office Installation Instructions*.

Connecting Ethernet Connections to the IPC or Ethernet Hubs

Use this procedure for connecting RADSL and MVL cards to the IPC or Ethernet hubs. For other types of cards, refer to the appropriate Installation Instructions.

▶ Procedure

To connect the DSL cards to the Ethernet hubs or switches:

1. Plug the end of an 8-pin modular cable into the appropriate 10 BASE T port of the 8610 chassis. For example, if you want to connect to a DSL card in Slot 2, insert the 8-pin modular cable into the 10 BASE T Slot #2.

2. Run the 8-pin modular cable under the 8610 chassis and behind the left leg.

3. Plug the other end of the cable into your Ethernet hub or switch connector.
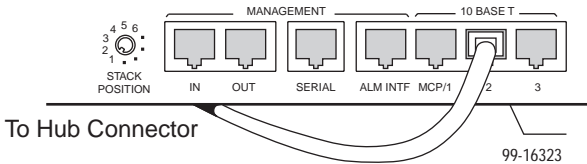
Connecting to an SNMP Management System

▶ Procedure

To connect the Hotwire 8610 DSLAM base chassis (i.e., the chassis that contains the MCP card) to an SNMP management system:

1. Plug the end of an 8-pin modular cable into the MCP/1 port of the Hotwire 8610 DSLAM base chassis.

2. Dress the 8-pin cable under the 8610 chassis to the left and behind the left support foot.

3. Plug the other end of the cable into the 10BaseT hub connector to the SNMP management system network.

22
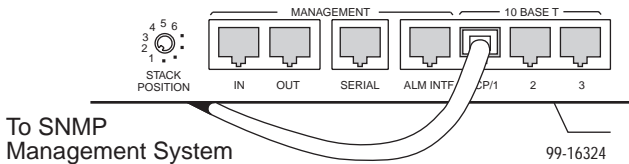
Connecting to a Terminal or Laptop Computer

▶ Procedure

To connect the Hotwire 8610 DSLAM chassis to a terminal or laptop computer:

1. Connect the serial cable with 8-pin modular plugs on each end (provided with the MCP card) into the MANAGEMENT SERIAL port of the chassis.

2. Dress the serial cable under the 8610 chassis, to the left and behind the left support foot.

3. Plug the other end of the cable into the terminal or laptop computer serial port, using the appropriate DB25 or DB9 adapter that is supplied with the MCP card.
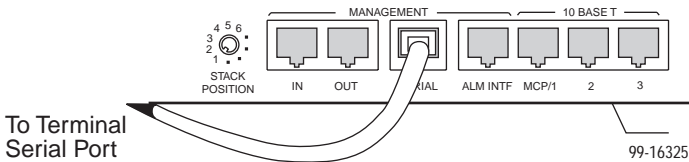
4. Configure your terminal or terminal emulator with the following settings:

   — Baud Rate = 9600

   — Data Bits = 8

   — Parity = No Parity

   — Stop Bits = 1

   — Flow Control = XON/XOFF

   — Terminal Type = VT100

Connecting to a Modem for Remote Management

Before connecting the Hotwire 8610 DSLAM to a dial-up modem, configure the modem with the following settings:

■ Set the modem for auto answer. For example, ATS0=1.

■ Turn off character echo. For example, ATE0.

■ Enable result codes in originate mode only. For example, ATQ2.

■ Set the modem to ignore Data Terminal Ready (DTR). For example, AT&D0.

▶ Procedure

To connect the Hotwire 8610 DSLAM chassis to a dial-up modem:

1. Connect an 8-pin modular plug-ended serial cable into the MANAGEMENT SERIAL port of the Hotwire 8610.

2. Dress the serial cable under the 8610 chassis, to the left and behind the support foot.

3. Plug the other end of the cable into your modem's serial port using a DB25 (RS-232 male) adapter, supplied with the MCP card, and a Null Modem adapter.

Management Serial

Dial-up Modem

DB25 Adapter

Null Modem
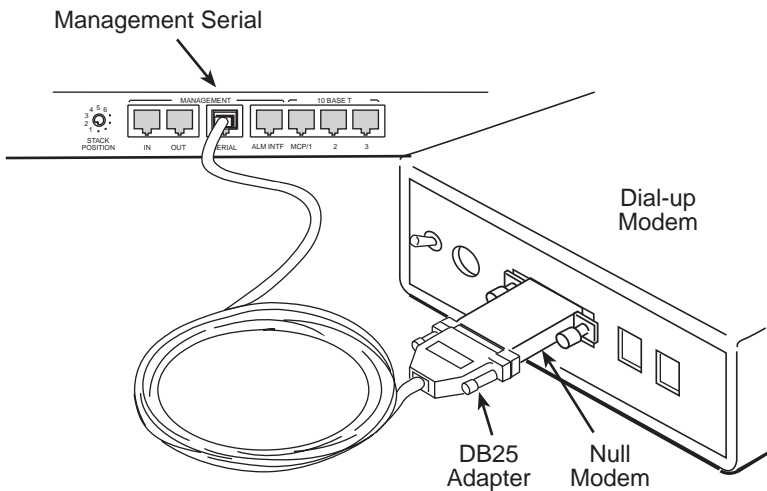
99-16326

Connecting CO Alarm to the Alarm System

The following procedure is optional. Follow this procedure only if you want to connect to a CO alarm system. See *8-Pin Modular Connector for Alarm Relay Interface* on page 28 for pin-out information.

▶ **Procedure**

To connect the 8610 DSLAM to a CO alarm system:

1. Plug the 8-pin modular cable into the ALM INTF connector on the front of the 8610 chassis.

2. Remove the modular plug connector at the end of the cable, strip the wires and connect to the desired CO alarm system outputs.

Troubleshooting

Symptom	Possible Cause	Solutions
Either the PWR A or PWR B LEDs, or both, are OFF.	Failure in a single chassis within a stack. No power.	1. To clear the power alarm, remove the power from the chassis and disconnect the powered-off chassis from the management daisy chain (bypassing the failed chassis). 2. Using a voltmeter, check for power at the terminal connections. – If there is power, call your sales representative for service. – If there is no power at the terminal, call the appropriate electrician.
Fan Alarm LED is ON	Fan failure.	Go to the stack to see which chassis is reporting the fan alarm. To clear the fan alarm, contact your service technician to replace the Hotwire 8610 chassis.

Symptom	Possible Cause	Solutions
System Alarm LED is ON (on a DSL card)	SYSTEM ALM LED is ON and DSL card is inoperative in Slot *n*.	1. Choose Card Selection from the Main Menu to display the status of each DSL card. 2. If a major alarm is indicated, reset the MCP card (**A-A-F**). Then, reset the DSL card (**A-A-E**). 3. Remove and reinstall the card. 4. If unable to clear by resetting the card, replace the card.
DSL Card is not working properly	Path to LAN/WAN hub or switch is not OK.	Make sure the path to the LAN/WAN hub or switch is OK.
	Cable connection to hub is not OK.	Check cables to the hub and make sure connection is made properly.
	Problem with connections in this slot.	Remove the DSL card from the slot and reinstall the card into another slot.
	Bad DSL card.	Replace the DSL card.
MCP has a slot number assigned on the Card Selection screen (rather than M)	Stack Position switch is not set to 1.	Check that the Stack Position switch on the base of the chassis containing the MCP card is set to 1.
Difficulty seating MCP or DSL Card when installing	Other cards and filler plates in the chassis are not properly secured.	Check to see that the other cards and filler plates in the chassis are properly secured by the screws on the faceplate. If you still experience difficulty in seating the card, call service.
	Card may be slightly warped.	Manipulate the card until it mates with the connector.

LEDs

The following table describes the meaning and states of the LEDs on the front panel of the DSLAM chassis. For individual card LEDs, see the appropriate card Installation Instructions.

LED	LED is . . .	Indicating . . .
PWR A	Green	Normal operation for Power Source A.
	Off	Low, high, or no voltage for Power Source A.
PWR B	Green	Normal operation for Power Source B.
	Off	Low, high, or no voltage for Power Source B.
FAN ALM	Yellow	Fan failure or a single fan in the Fan Module is working at less than 50% of its normal output.
	Off	Normal operation or no power to mounting.

Pinouts

8-Pin Modular Connector for Alarm Relay Interface

The 8-pin interface for the Alarm Relay Interface (ALM INTF) connection has the following pin assignments.

Pin Number	Use
1	Not used
2	Closed on major alarm
3	Common on major alarm
4	Open on major alarm
5	Closed on minor alarm
6	Common on minor alarm
7	Open on minor alarm
8	Not used

Pin 1   Pin 8

97-15449
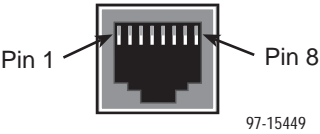
8-Pin Modular LAN/WAN Slot Connector

The 8-pin interface for the LAN/WAN 10BaseT connections (Slots MCP/1, 2, or 3) has the following pin assignments.
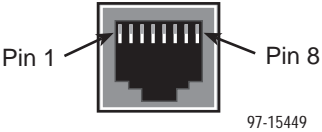
Pin Number	Use
1	TX Data +
2	TX Data –
3	RX Data +
4	Reserved
5	Reserved
6	RX Data –
7	Reserved
8	Reserved

Pin 1   Pin 8

97-15449

8-Pin Modular Management In and Out Connector

The 8-pin interface for the Management In and Out connections has the following pin assignments.

Pin Number	Use
1	Mgt. Data +
2	Mgt. Data –
3	Fan Alarm
4	Ground
5	Power Alarm A
6	Power Alarm B
7	Mgt. Clk +
8	Mgt. Clk –

Pin 1   Pin 8

97-15449

8-Pin Modular Serial (Asynchronous Terminal) Connector

The 8-pin serial connector for asynchronous terminal interface (DCE type) has the following pin assignments.

NOTE:
The serial port is active only on the base unit.

Pin Number	Function
1	Reserved
2	Reserved
3	Reserved
4	Signal Ground
5	Receive Data
6	Transmit Data
7	Reserved
8	Reserved

Pin 1   Pin 8

97-15449
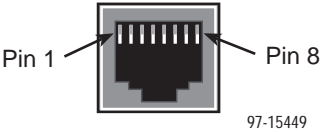
DB25 Adapter Pinouts

The DB25 (RS-232 male) cable adapter is used to convert the 8-pin modular serial interface to a standard RS-232 DB25 interface, which can then be connected to a terminal, computer, or any Data Termination Equipment (DTE). Connection to a modem requires a null modem adapter. The following table lists the pin assignments.

8-Pin Modular Serial Interface Pin Number	Use	DB25 Interface Pin Number
1 2	Pins 1 and 2 are shorted together	–
3	Data Terminal Ready	20
4	Signal Ground	7
5	Receive Data	3
6	Transmit Data	2
7	Clear to Send	5
8	Request to Send	4

99-15388a
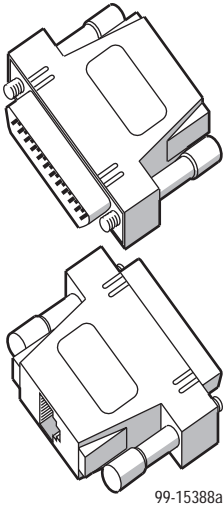
DB9 Adapter Pinouts

The female DB9 cable adapter is used to convert the 8-pin modular serial interface to a standard DB9 interface, which can then be connected to a laptop computer. The following table lists the pin assignments.

8-Pin Modular Serial Interface Pin Number	Use	DB9 Interface Pin Number
1 2	Pins 1 and 2 are shorted together	–
3	Data Terminal Ready	4
4	Signal Ground	5
5	Receive Data	2
6	Transmit Data	3
7	Clear to Send	8
8	Request to Send	7

99-16049a
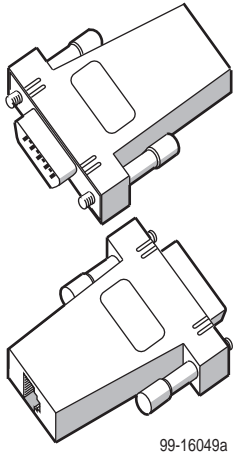
Telco 50-Pin Connector Pinouts for DSL Loops and POTS Splitters

The three Telco 50-pin receptacles on the rear of the chassis (labeled for Slots 1, 2, 3) provide the 2-wire loop interface from each DSL port to either the POTS splitter card or, if the loop is not being shared with POTS, then to the Main Distribution Frame (MDF). The following table lists the pin assignments for each of these interfaces.
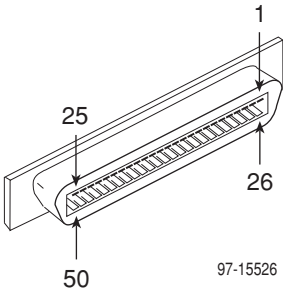
> **NOTE:**
>
> When the 8610 chassis is the base chassis, the MCP is installed in Slot 1 and the Tips and Rings for Slot 1 are not connected internally and are not active.

CONN # for Slots 1–3	CONN PINS (Tip, Ring)	CONN # for Slots 1–3	CONN PINS (Tip, Ring)
Port 1	1, 26	Port 14	14, 39
Port 2	2, 27	Port 15	15, 40
Port 3	3, 28	Port 16	16, 41
Port 4	4, 29	Port 17	17, 42
Port 5	5, 30	Port 18	18, 43
Port 6	6, 31	Port 19	19, 44
Port 7	7, 32	Port 20	20, 45
Port 8	8, 33	Port 21	21, 46
Port 8	9, 34	Port 22	22, 47
Port 10	10, 35	Port 23	23, 48
Port 11	11, 36	Port 24	24, 49
Port 12	12, 37	Port 25	25, 50
Port 13	13, 38		

Technical Specifications

The following table lists the technical specifications for the Hotwire 8610 DSLAM chassis:

Specifications	Criteria*
Physical Dimensions	Height: 4.7 inches (11.94) Width: 17.2 inches (43.69 cm) Depth: 10.5 inches (26.67 cm) Weight: 9 pounds (4.08 kg) Three chassis can be safely placed on top of each other on a desktop or table. In addition, a standard 7-foot EIA cabinet can hold a maximum of 14 chassis.
Interfaces	■ −48V power (two pairs of screw terminals for A and B inputs) ■ Three 8-pin modular jacks for 10BaseT Network Access Provider interfaces and for the MCP card ■ Three 50-pin Telco connector for DSL Loop interfaces ■ Two 8-pin modular jacks for daisy-chained control bus connection ■ One 8-pin modular jack for a VT100 compatible terminal (serial) connection ■ One 8-pin modular jack for the Alarm Relay Interface connection
Power	Two versions of the Hotwire 8610 DSLAM chassis are available: an ac power version and a dc power version. The ac version can be connected to a dc source to provide power redundancy. With the dc version, two separate dc sources may be employed to provide power redundancy. The ac version accepts ac power (100–250V, 50–60 Hz) and converts it to dc power. The maximum current draw is less than 1.75 amps, or 75 watts @ 110 Vac. At maximum configuration with 3 DSL cards, the system will not exceed 85 watts of power dissipation. The Hotwire 8610 DSLAM chassis dc version operates from a standard −48 Vdc power supply (−40.0 to − 60.0 Vdc). The maximum current draw is 2 amps. At maximum configuration with 3 DSL cards, the system will not exceed 75 watts of power dissipation. Each power version distributes −48 Vdc power from the power source to individual cards via the backplane.
* Technical Specifications subject to change without notification.	

Specifications	Criteria*
Grounding	A ground lug is located on the right rear of the Hotwire 8610 DSLAM. It accepts 14 AWG wire.
	A noninsulated banana jack is located at the left front of the 8610 DSLAM providing a ground for the ESD wrist strap plug.
Cooling and Air Handling	The internal fan module is installed in the chassis to provide cooling.
	A built-in feature shuts off power to the circuit cards if a chassis overheats because of fan failure. If the temperature in the chassis reaches 70°C, power to the cards in the chassis is turned off automatically. Power is turned on when the temperature drops below 60°C.
Operating Environment	Ambient Temperature: 32° to 122° F (0° to 50°C)
	Relative Humidity: 15% to 90% noncondensing
	Shock and vibration sufficient to withstand normal shipping
* Technical Specifications subject to change without notification.	

⚠ Important Safety Instructions

1. Read and follow all warning notices and instructions marked on the product or included in the manual.

2. The AC product version is intended to be used with a 3-wire grounding type plug – a plug which has a grounding pin. This is a safety feature. Equipment grounding is vital to ensure safe operation. Do not defeat the purpose of the grounding type plug by modifying the plug or using an adapter.

   Prior to installation, use an outlet tester or a voltmeter to check the ac receptacle for the presence of earth ground. If the receptacle is not properly grounded, the installation must not continue until a qualified electrician has corrected the problem.

   If a 3-wire grounding type power source is not available, consult a qualified electrician to determine another method of grounding the equipment.

3. Slots and openings in the cabinet are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, these slots and openings must not be blocked or covered.

4. Do not allow anything to rest on the power cord and do not locate the product where persons will walk on the power cord.

5. Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous high voltage points or other risks. Refer all servicing to qualified service personnel.

6. General purpose cables are provided with this product. Special cables, which may be required by the regulatory inspection authority for the installation site, are the responsibility of the customer.

7. When installed in the final configuration, the product must comply with the applicable Safety Standards and regulatory requirements of the country in which it is installed. If necessary, consult with the appropriate regulatory agencies and inspection authorities to ensure compliance.

8. A rare phenomenon can create a voltage potential between the earth grounds of two or more buildings. If products installed in separate buildings are **interconnected**, the voltage potential may cause a hazardous condition. Consult a qualified electrical consultant to determine whether or not this phenomenon exists and, if necessary, implement corrective action prior to interconnecting the products.

9. Input power to the DC voltage configurations of this product must be provided by one of the following: (1) a National Electrical Code (NEC)/Canadian Electrical Code (CEC) Class 2 circuit for use in North America, or (2) a certified Safety Extra Low Voltage (SELV) /Limited Power Source (LPS) input for use in the country of installation.

10. In addition, if the equipment is to be used with telecommunications circuits, take the following precautions:

   — Never install telephone wiring during a lightning storm.

   — Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.

   — Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.

   — Use caution when installing or modifying telephone lines.

   — Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.

   — Do not use the telephone to report a gas leak in the vicinity of the leak.

EMI Warnings

⚠ WARNING:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

The authority to operate this equipment is conditioned by the requirements that no modifications will be made to the equipment unless the changes or modifications are expressly approved by Paradyne Corporation.

⚠ WARNING:

To Users of Digital Apparatus in Canada:

This Class A digital apparatus meets all requirements of the Canadian interference-causing equipment regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du règlement sur le matériel brouilleur du Canada.

Notice to Users of the Canadian Telephone Network

The Industry Canada label identifies certified equipment. This certification means that the equipment meets telecommunications network protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION:

Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.

CE Marking

When the product is marked with the CE mark, this demonstrates full compliance with the following European Directives:

- **Directive 72/73/EEC** – Council Directive of 19 February 1973 on the harmonization of the laws of the member states relating to electrical equipment designed for use within certain voltage limits, as amended by Directive 93/68EEC.

- **Directive 89/336/EEC** – Council Directive of 3 May 1989 on the approximation of the laws of the member states relating to Electro-Magnetic Compatibility (EMC), as amended by Directive 93/68/EEC.

Japan

Class A ITE

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This is a Class A product based on the standard of the Voluntary Control Council for interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.